Homework 1 - Functions & Expressions

CS 1301 - Intro to Computing - Spring 2022

Important

- Due Date: **Tuesday, January 18th, 11:59 PM**.
- This is an individual assignment. High-level collaboration is encouraged, **but your submission must be uniquely yours.**
- Resources:
  - TA Helpdesk
  - Email TA's or use class Piazza
  - How to Think Like a Computer Scientist
  - CS 1301 YouTube Channel
- Comment out or delete all function calls. Only import statements, global variables, and comments are okay to be outside of your functions.
- **Read the entire document before starting this assignment.**

The goal of this homework is for you to practice and understand how to write functions and evaluate expressions. The homework will consist of 4 functions for you to implement. You have been given a `HW01.py` skeleton file to fill out. However, below you will find more detailed information to complete your assignment. Read it thoroughly before you begin.

Hidden Test Cases: In an effort to encourage debugging and writing robust code, we will be including hidden test cases on Gradescope for some functions. You will not be able to see the input or output to these cases. Below is an example output from a failed hidden test case:

```
Test failed: False is not True
```

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Helpful Information To Know

String Formatting

A concept that will be very helpful for this homework is string formatting. String formatting allows you to manipulate strings using variables so that string values can change based on whatever information is stored in the variables. To explore this concept, let's look at an example where a user inputs a name and age, and the code prints out the corresponding information:

```
name = input("What is your name?")
age = input("How old are you?")
print("Your name is {} and you are {} years old!".format(name, age))
```

Anywhere in a string, you can put `{}` to indicate a placeholder for a variable. After the end quotation marks of the string, you write `.format()`, and inside the parentheses will be the variables that you want to include. The variables inside the parentheses must be in the order that you want them to be included in the string.

Rounding Numbers

Python has a built-in function that allows you to round numbers. For example:

```
>>> rounded_number = round(3.1415926, 4)
>>> print(rounded_number)
3.1416
```

Inside the parentheses of the `round()` function, put the number you want to round, followed by a comma and the number of decimal places you want to round the number to.

Dinner Time

Function Name: dinnerTime()
Parameters: N/A
Returns: None
Description: You and your friends decide to celebrate returning to campus by going out to eat dinner. You decide to treat your friends and take care of the bill. Write a function that asks a user how many entrees they want and how many drinks they want and then prints the cost of the entire meal. Drinks are worth $4.50 and entrees are worth $12. **Round your answer to two decimal points.**

```
>>> dinnerTime()
How many entrees will you be ordering? 3
How many drinks will you be ordering? 3
The total cost of all the meals and drinks is $49.5.
```

```
>>> dinnerTime()
How many entrees will you be ordering? 5
How many drinks will you be ordering? 7
The total cost of all the meals and drinks is $91.5.
```

Bottle Bonanza

Function Name: bottleBonanza()
Parameters: N/A
Returns: None
Description: You've been assigned the tedious task of finding the volume of water bottles of varying size. Write a function that asks the user the radius and height of a water bottle and prints the volume of the water bottle with the given dimensions. **The inputs can be floats. Round your answer to two decimal points.**

Note: Use `3.14` as the value for pi.
Note: The volume of a cylinder is `V = (pi)(r^2)(h)`, where r is radius and h is height.

```
>>> bottleBonanza()
What is the radius of the water bottle? 3
What is the height of the water bottle? 10
The volume of the water bottle is 282.6.
```

```
>>> bottleBonanza()
What is the radius of the water bottle? 12
What is the height of the water bottle? 1
The volume of the water bottle is 452.16.
```

Winter break

Function Name: winterBreak()
Parameters: N/A
Returns: None
Description: Over winter break you decided to spend some time watching various netflix shows and random youtube videos. Write a function that asks the user how many TV show episodes and youtube videos they watched and prints a response with how much time they spent watching both forms of entertainment in total. You can assume TV show episodes on Netflix are 40 mintues long and YouTube videos are 10 minutes long.

```
>>> winterBreak()
How many episodes did you watch? 2
How many YouTube videos did you watch? 10
You spent 3 hours and 0 minutes watching Netflix and YouTube over winter break.
```

```
>>> winterBreak()
How many episodes did you watch? 2
How many YouTube videos did you watch? 0
You spent 1 hours and 20 minutes watching Netflix and YouTube over winter break.
```

Skateboard

Function Name: skateboardMoney()
Parameters: N/A
Returns: None
Description: Last week you walked into a store and saw the most amazing skateboard and you really want to buy it, but it's quite expensive. You are given a monthly allowance from your parents. You save a percentage of your allowance for emergencies. Besides that, you spend $4.40 on coffee and $5.99 on a croissant every day. Write a function that asks the user what their monthly allowance is and what percentage of their allowance they want to save. Then, print out how much money they'll have left over at the end of the month after accounting for savings and fees on food and coffee. **Round your answer to two decimal points.**

Note: You may assume that an average month contains 30 days.

```
>>> skateboardMoney()
How much is your monthly allowance? 500
What percentage of your allowance do you want to save? 20
You'll have $88.3 left to spend on your skateboard after savings and fees.
```

```
>>> skateboardMoney()
How much is your monthly allowance? 350
What percentage of your allowance do you want to save? 5
You'll have $20.8 left to spend on your skateboard after savings and fees.
```

Grading Rubric

Function	Points
dinnerTime()	25
bottleBonanza()	25
winterBreak()	25
skateboardMoney()	25
Total	**100**

Provided

The `HW01.py` skeleton file has been provided to you. This is the file you will edit and implement. All instructions for what the functions should do are in this skeleton and this document.

Submission Process

For this homework, we will be using Gradescope for submissions and automatic grading. When you submit your `HW01.py` file to the appropriate assignment on Gradescope, the autograder will run automatically. The grade you see on Gradescope will be the grade you get, unless your grading TA sees signs of you trying to defeat the system in your code. You can re-submit this assignment an unlimited number of times until the deadline; just click the “Resubmit” button at the lower right-hand corner of Gradescope. You do not need to submit your `HW01.py` on Canvas.